CLAIMS

1. A medical device for use inside a body of a mammalian subject, the device comprising:

a casing adapted for insertion into the body of the mammalian subject, the casing having an outer surface and comprising an insulating material and an electrically-conductive material, which are arranged so that an area of the outer surface of the casing is electrically conductive; and

a transmitter, which is adapted to generate an electrical signal and is encapsulated in the casing and coupled to the conductive material so that the electrically-conductive area of the outer surface serves as an antenna for transmitting the signal to a receiver outside the body.

2. The device according to claim 1, wherein the insulating material comprises at least one of a ceramic material and a plastic material.

3. The device according to claim 1, wherein the casing has an inner surface, and wherein the electrically-conductive material is arranged to fill an entire thickness of the casing between the inner surface and the electrically-conductive area of the outer surface.

4. The device according to claim 1, wherein the conductive material is arranged in a layer overlying the insulating material in the electrically-conductive area.

5. The device according to claim 1, wherein the electrically-conductive area is configured to contact a metal implant within the body of the mammalian subject while transmitting the signal.

6. The device according to claim 1, wherein the electrically-conductive area is configured to contact an electrically-conductive body fluid while transmitting the signal.

7. The device according to claim 6, wherein the electrically-conductive area is configured to contact the electrically-conductive body fluid in at least one of a digestive tract and a vascular system of the body.

8. The device according to claim 1, and comprising a sensor, which is encapsulated within the casing and is adapted to sense a parameter associated with a location of the device within the body, wherein the sensor is coupled to the transmitter so that the signal generated by the transmitter is indicative of the sensed parameter.

9. The device according to claim 8, wherein the sensor comprises a position sensor, such that the signal generated by the transmitter is indicative of a position coordinate of the device.

10. The device according to claim 8, wherein the parameter comprises a physiological parameter.

11. The device according to claim 10, wherein the sensor comprises at least one of a pressure sensor, a temperature sensor, a flow sensor, a chemical sensor, an electrical sensor and an optical sensor.

12. A medical implant, comprising:

an implantable member, comprising a metallic material, which is adapted to be implanted in a body of a mammalian subject; and

a signal transmission device, comprising:

a casing having an outer surface and comprising an insulating material and an electrically-conductive material, which are arranged so that an area of the outer surface of the casing, in contact with the metallic material of the implantable member, is electrically conductive; and

a transmitter, which is adapted to generate an electrical signal and is encapsulated in the casing and coupled to the conductive material so that the electrically-conductive area of the outer surface serves as an antenna for transmitting the signal to a receiver outside the body.

13. The implant according to claim 12, wherein the implantable member comprises an implantable orthopedic device.

14. An invasive medical tool, comprising:

an insertion member, having a distal end, which is adapted to be inserted into a body of a mammalian subject; and

a signal transmission device, contained within the distal end of the insertion member and comprising:

a casing having an outer surface and comprising an insulating material and an electrically-conductive material, which are arranged so that an area of the outer surface of the casing is electrically conductive;

a sensor, which is encapsulated within the casing and is adapted to sense a parameter associated with a location of the distal end of the insertion member within the body; and

a transmitter, which is adapted to generate an electrical signal that is indicative of the parameter sensed by the sensor, and which is encapsulated in the casing and coupled to the conductive material so that the electrically-conductive area of the outer surface serves as an antenna for transmitting the signal to a receiver outside the body.

15. The tool according to claim 14, wherein the sensor comprises a position sensor, such that the electrical signal generated by the transmitter is indicative of a position coordinate of the device, and comprising a receiver, which is adapted to receive the electrical signal transmitted by the antenna and to process the electrical signal so as to determine coordinates of the insertion member within the body.

16. The tool according to claim 14, wherein the insertion member comprises a catheter.

17. A position sensing system, comprising:

a position sensing device, for insertion into a body of a mammalian subject, the device comprising:

a casing adapted for insertion into the body, the casing having an outer surface and comprising an insulating material and an electrically-conductive material, which are arranged so that an area of the outer surface of the casing is electrically conductive;

a sensor, which is encapsulated within the casing and is adapted to sense a parameter indicative of a position of the device within the body; and

a transmitter, which is adapted to generate an electrical signal that is indicative of the parameter sensed by the sensor, and which is encapsulated in the casing and coupled to the conductive material so that the electrically-conductive area of the outer surface serves as an antenna for transmitting the signal to a receiver outside the body; and

a receiver, which is adapted to receive the electrical signal transmitted by the antenna and to process the electrical signal so as to determine coordinates of the device within the body.

18. A method for transmitting a signal from inside a body of a mammalian subject, the method comprising:

encapsulating an electronic device comprising a transmitter in a casing having an outer surface and comprising an insulating material and an electrically-conductive material, which are arranged so that an area of the outer surface of the casing is electrically conductive;

coupling the transmitter to the conductive material so that the electrically-conductive area of the outer surface serves as an antenna for the transmitter;

inserting the casing containing the device into the body of the mammalian subject; and

transmitting the signal from the transmitter within the body via the antenna to a receiver outside the body.

19. The method according to claim 18, wherein inserting the casing comprises making contact between the electrically-conductive area and a metal implant that is

placed within the body of the mammalian subject, so as to increase a gain of the antenna in transmitting the signal.

20. The method according to claim 19, wherein the metal implant comprises an orthopedic implant, and wherein inserting the casing comprises fixing the orthopedic implant to a bone in the body.

21. The method according to claim 18, wherein inserting the casing comprises bringing the electrically-conductive area into contact with an electrically-conductive body fluid while transmitting the signal, so as to increase a gain of the antenna in transmitting the signal.

22. The method according to claim 21, wherein bringing the electrically-conductive area into contact comprises contacting the electrically-conductive body fluid in at least one of a digestive tract and a vascular system of the body.

23. The method according to claim 18, wherein transmitting the signal comprises sensing a parameter associated with a location of the device within the body, wherein the transmitted signal is indicative of the sensed parameter.

24. The method according to claim 23, wherein the transmitted signal is indicative of a position coordinate of the device, and comprising receiving and processing the signal outside the body in order to determine the position coordinate.

25. The method according to claim 24, wherein inserting the casing comprises fixing the casing to an invasive medical tool, and wherein processing the signal comprises determining the location of the tool within the body.

26. The method according to claim 23, wherein sensing the parameter comprises sensing a physiological parameter with respect to the body.

27. The method according to claim 26, wherein sensing the physiological parameter comprises sensing at least one of a pressure, a temperature, a flow characteristic, a chemical characteristic, an electrical characteristic and an optical characteristic.